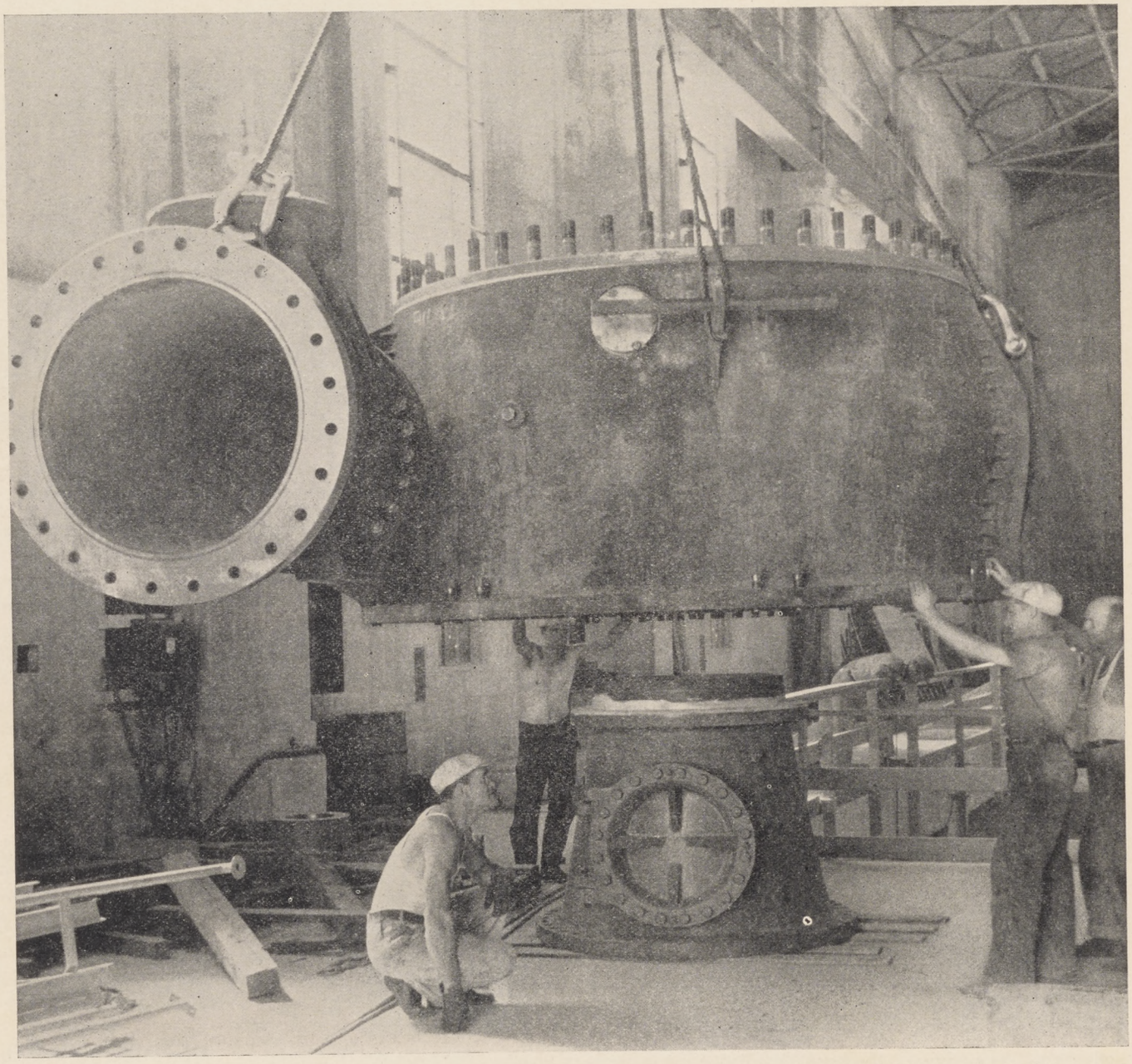
• COLORADO RIVER •

AQUEDUCT NEWS

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Vol. V SEPTEMBER 25, 1938 No. 18



Assembling the pump bowl and inlet section for one of the 200-cubic-foot-per-second pumps at Hayfield preparatory to lowering it into the deep pit. The discharge outlet, upper left, is 42 inches in diameter.

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AQUEDUCT NEWS
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

306 West Third St.
Los Angeles, California

Published twice monthly in the interest of Field and Office Workers on the Colorado River Aqueduct, and for the information of all other citizens of the Metropolitan Water District.

Vol. 5 September 25, 1938 No. 18

Water Tables Show Little Rise Despite Heavy Rains of 1938

By C. C. ELDER
Hydrographic Engineer, M.W.D.

In sharp contrast with the years prior to 1931, rainfall in the Metropolitan area averaged 2% above normal during the five years 1932 to 1936, and 53% above normal during the winters of 1937 and 1938. The recent rainfall excess was even greater in some of the nearby mountain watersheds.

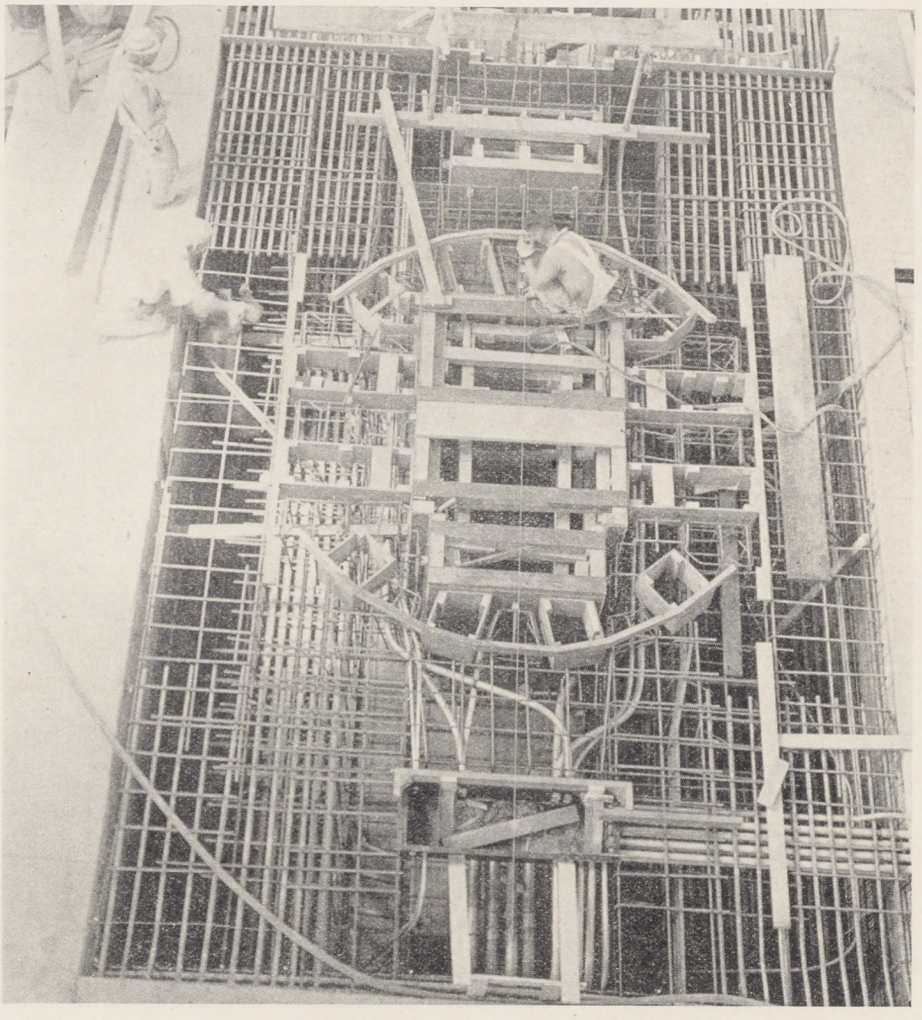
As a result, the impression has arisen in some quarters that the drop of underground water tables has been temporarily stopped. However, careful study of underground water tables reveals that there has been a continuing drop in water levels in many sections and only a slight rise in other areas.

The Colorado River Aqueduct construction bonds were voted in September, 1931, on the basis of evidence that the groundwater levels in the Southern California coastal plain had long been, and then were, continuously receding. This evidence was based on material collected over several decades, and particularly during the eight-year period of aqueduct investigation and planning.

This effect was recognized as, in part, a result of the severe drouth cycle then prevailing. During the years 1923 to 1931, the period of the aqueduct project surveys and studies, the rainfall at Los Angeles averaged 11.75 inches, or but 78% of the long-time normal. To a large degree, however, water tables (from which 90% of the region's water supply is pumped) were being depleted because of the excess pumping overdraft in many of the groundwater basins.

During the seven years since the aqueduct bond election, detailed investigations on the groundwater situation have

(*Continued on Page* 8)



Installation of the intricate mass of forms and reinforcing steel preparatory to placing concrete in the motor beam at the Eagle Mountain pumping plant.

– DIRECTORY –

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Transmission....Robert N. Allen
Maintenance.....W. J. Neale

SUPERINTENDENTS OF CONSTRUCTION PUMPING PLANTS

Intake and Gene.....T. T. Walsh
Iron Mt. .....B. H. Martin
Eagle Mt. and Hayfield.....R. C. Booth

SUPERINTENDENTS

(Main Aqueduct Tunnels)

San Jacinto Tunnel, District Force Acct., B. C. Leadbetter, Gen. Supt.; S. J. Shrode and C. E. Sides, Tunnel Supts.; Chas. F. Thomas, Jr., Edwin Noon, Supts.; F. A. Backman, Gen. Foreman.

(Distribution Tunnels)

Monrovia Tunnels Nos. 1, 2 and 3, West Construction Co., H. E. Carleton, Gen. Supt.; E. M. Penn, Concrete Supt.

(Distribution Pipe Line)

Schedules 9P, 10P, 11P, United Concrete Pipe Corp., Roy Richards, Construction Supt.

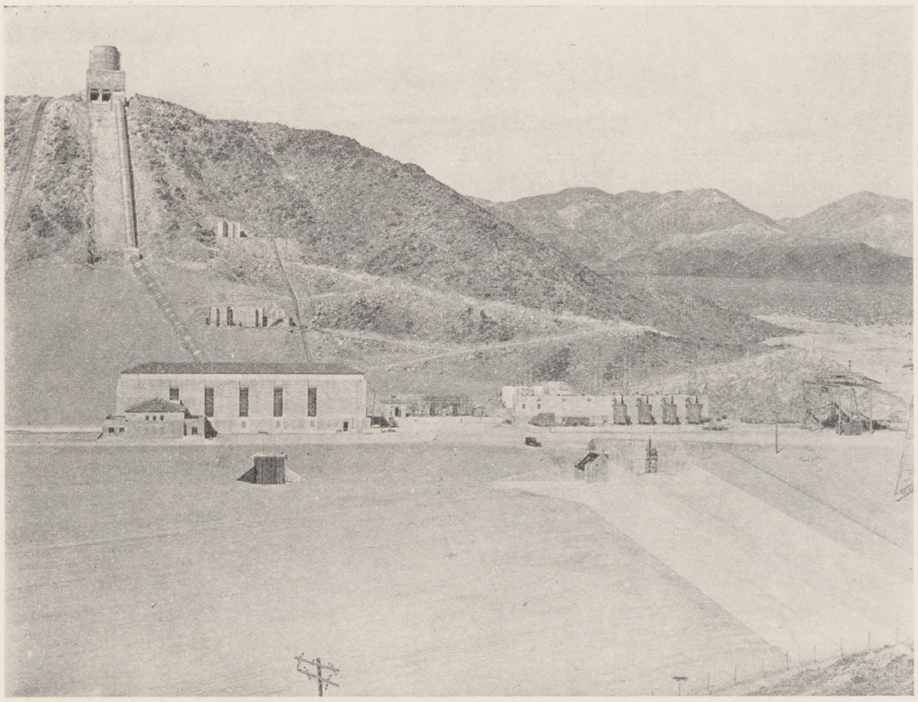
Schedules 8C, 9C, 12C, Basich Bros., Nick Basich, Gen. Supt.

Schedules 21SC, 22SC, 23SC, J. F. Shea Co., Gilbert J. Shea, Gen. Mgr.; C. A. Shea, Jr., H. F. Rennebohm, Supts.

Distribution Headworks, The Contracting Engineers Co.; Julian Huddelston, Supt.

(Dams)

Parker Dam, J. F. Shea Co., Frank Crowe, Gen. Supt.; H. P. Bunger, Constr. Eng., U.S.B.R.



The 438-foot lift at Eagle Mountain pumping plant is well illustrated in this recent picture of that plant.

3,000-Foot Mark in San Jacinto Tunnel Cracked on Sept. 16

San Jacinto tunnel hardrock crews cracked the 3000-foot mark (remaining to be driven) on September 16, and on September 20 had cut the distance remaining to be excavated in the 13-mile tunnel to 2848 feet.

During the first 20 days of the month the Lawrence and Potrero headings were advanced a total distance of 668 feet at a daily average of 33.4 feet. During this period the Lawrence heading was pushed west 372 feet at an average of 18.6 feet per day, and the Potrero face advanced east 296 feet at an average rate of 14.8 feet per day.

Excavation in Lawrence was through hard, blocky granodiorite, with a small flow of 75 gallons per minute at the face on the 20th. The Potrero face was advanced through very blocky granite with a small amount of water not exceeding 50 gallons per minute.

District Producing New Motion Picture for Early Release

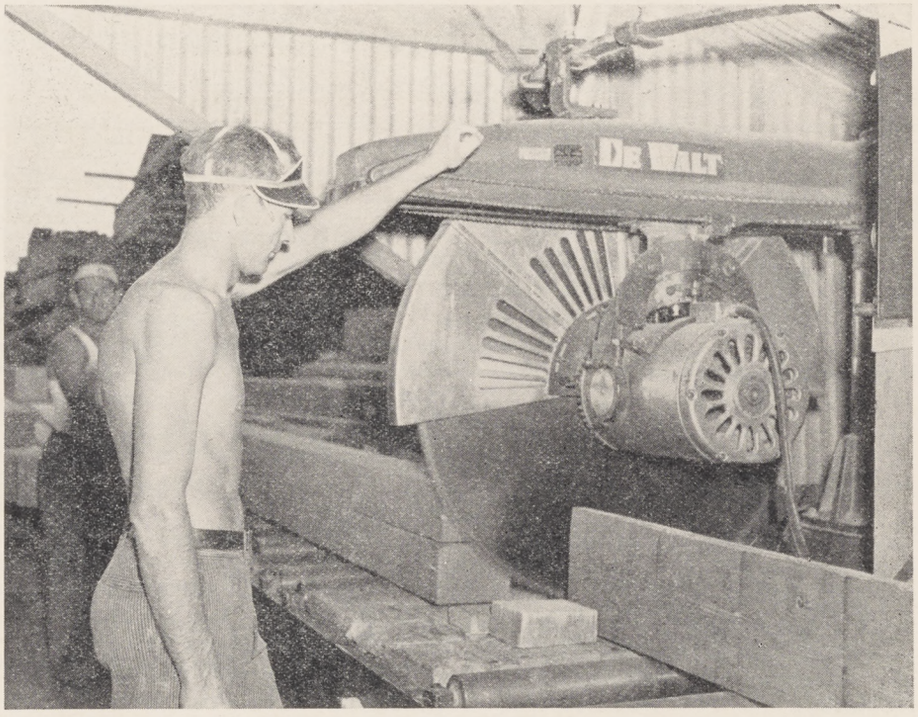
Featuring the latest views of completed aqueduct structures, such as Parker Dam, pumping plants, canals, and the Cajalco Reservoir, a new motion picture is now being produced which will present an accurate description of the Metropolitan Water District and of the building of the Colorado River Aqueduct.

The exact date for the first showing of the new picture, which is titled "The Thirteen Golden Cities," has not been set, but it is expected that the picture will be available for public release during the month of October.

A short prologue at the beginning of the picture will present a scene on one of the great ranchos of early California, and weaves in the legend of the "Seven Cities of Cibola," the fabled cities of gold that were thought to be located in the southwest deserts of what is now the United States. It was while searching for these legendary cities in the year 1540, that Hernando Alarcon and Francisco de Coronado discovered the Colorado River.

"The Thirteen Golden Cities" was taken with sound, and its aqueduct construction sequences have been carefully selected from the District's motion picture film library which contains an accurate and complete motion picture record of the building of the Colorado River Aqueduct. All aqueduct sequences were filmed by Will Fox, M.W.D. staff photographer.

Included in these sequences will be a series of underground pictures taken in the San Jacinto tunnel, which will give the layman a first-hand view of the construction of that 13-mile tunnel.



This big saw, which was especially designed for use in the Banning Shops, will cut a 16x16 timber, at a 45 degree angle, in 2¼ seconds. Note the special quadrant bar over the top of the saw.

CONSTRUCTION PROGRESS

September 1 to 15, 1938

SUMMARY

TUNNEL (MILES)	EXCAVATION Completed	EXCAVATION Remaining	LINING Completed	LINING Remaining
Aqueduct	91.54	0.57	86.11	6.00
Distribution	16.36	0.31	16.21	0.42
Total	107.90	0.88	102.32	6.42

CANAL, CONDUIT AND SIPHON (MILES)	Completed	Remaining
Excavation	145.60	0.01
Concrete	144.42	0.14
Backfill	80.70	0.14

DISTRIBUTION PIPE LINE (MILES)	Completed	Remaining
Excavation	57.85	5.35
Concrete	57.55	5.65
Backfill	55.40	7.80

TUNNELS

AQUEDUCT

CONTRACTOR	TUNNEL	LENGTH IN FEET	EXCAVATION IN FEET: NUMBER OF SHIFTS	AVERAGE PER SHIFT	THIS PERIOD	TOTAL TO DATE	REMAINING	LINING IN FEET: ARCH OR INVERT	NUMBER OF SHIFTS	AVERAGE PER SHIFT	THIS PERIOD	TOTAL TO DATE	REMAINING
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA	SAN JACINTO										*(249)	(37,147)	(31,696
	Cabazon Shaft to East Portal	8,880		Completed		8,880	0	Arch	0	0	0	8,484	396
								Invert	0	0	0	8,484	396
	Cabazon to Lawrence	26,809		Completed		24,158		Arch	0	0	0	6,973	19,836
	Lawrence to Cabazon			Completed		2,651	0	Invert	0	0	0	6,972	19,837
	Lawrence to Potrero		45	5.8	261	2,644	3,022						
	Potrero to Lawrence	17,672	45	5.2	233	12,006		Arch			0	5,802	11,870
								Invert	9	138.4	1,246	7,837	9,835
	Potrero Shaft to West Portal	15,482		Completed		15,482	0	Arch	0	0	0	15,482	0
								Invert	0	0	0	15,482	0
	TOTALS Ft.	68,843	90	5.5	494	65,821	3,022	Arch			0	36,741	32,102
	Miles	(13.04)			(0.10)	(12.47)	(0.57)	Invert	9	138.4	1,246	38,775	30,068

*Invert considered to equal 0.2 and arch 0.8 of completed section.

DISTRIBUTION

WEST CONSTRUCTION CO.	MONROVIA NO. 3	32,105		Completed		32,105	0				0	32,095	0
J. F. SHEA CO., INC.	ROCKDALE (Schedule 21SC)	262			0	262	0				0	262	0
	OAKHILL (Schedule 21SC)	597	24	6.3	150	597	0				0	0	597
	ASCOT (Schedule 21SC)	1,622			0	0	1,622				0	0	1,622
	TOTALS Ft.	34,586	24	6.3	150	32,964	1,622				0	32,357	2,219
	Miles.	(6.55)			(0.03)	(6.24)	(0.31)				0	(6.13)	(0.42)

Canal, Conduit, Siphon and Pipe Lines

AQUEDUCT

SCHED. NO.	CONTRACTOR	FEATURES	Length In Feet	EXCAVATION—Feet: Period	To Date	Remain'g	CONCRETE—Feet: Period	To Date	Remain'g	BACKFILL—Feet: Period	To Date	Remain'g
20 A & B	M. W. D.—FORCE ACCT.	Siphon	752	0	705	47	0	0	752	0	0	752
DISTRIBUTION PIPE LINES												
9-P	UNITED CONC. PIPE CORP.	Precast Concrete Pipe	8,697	0	8,697	0	0	8,697	0	0	8,697	0
8C-9C-12C	BASICH BROTHERS	Cast-in-Place Conc. Pipe	1,656	46	1,444	212	296	1,444	212	0	1,014	642
21SC	J. F. SHEA CO., Inc	Welded Steel Pipe	26,449	4,240	22,237	4,212	3,826	20,426	6,023	3,055	13,270	13,179
22SC			28,310	2,931	4,484	23,826	3,493	4,706	23,604	945	945	27,365
23SC			34,358	0	34,358	0	0	34,358	0	778	34,358	0
	TOTALS		99,470	7,217	71,220	28,250	7,615	69,631	29,839	4,778	58,284	41,186

Miscellaneous Construction

PARKER RESERVOIR—SIX COMPANIES, INC.

FEATURES	Est. Quan.	Period	To Date	Per Cent.
Diversion Tunnels—Excav.	3,463 Ft.	0	3,463	100
Diversion Tunnels—Concrete	3,363 Ft.	0	3,363	100
Cofferdams—Excav.	227,582 C.Y.	0	227,582	100
Cofferdams—Fill	464,890 C.Y.	0	464,890	100
Outlet Works—Excav.	220,000 C.Y.	0	207,787	100
Outlet Works—Concrete	5,000 C.Y.	0	5,600	100
Dam—Excavation	1,502,200 C.Y.	0	1,526,726	100
Dam—Concrete	297,900 C.Y.	0	290,667	100
Power House—Excav.	58,000 C.Y.	0	67,894	100
Power House—Concrete	14,000 C.Y.	0	15,431	100

AQUEDUCT PUMPING PLANTS AND APPURTENANT WORKS

PLANT	CONTRACTOR	PER CENT COMPLETED: CONSTRUCTION	Installation of Equipment
			(Force Account)
INTAKE	WINSTON BROS. CO. & WILLIAM C. CROWELL	100	93
GENE		100	88
IRON MT.	WOOD & BEVANDA	100	95
EAGLE MT.	L. E. DIXON CO.	100	78
HAYFIELD	L. E. DIXON & CASE CONST. CO.	100	45

MONTHLY REPORT REVIEWS ACTIVITIES ALONG THE AQUEDUCT LINE

(EDITOR'S NOTE: The following is a brief summary of some of the activities of the District as set forth in the monthly report of General Manager F. E. Weymouth, filed with the Board of Directors in September, covering work done in August.)

Legal Division

All necessary documents to secure the payment for Interim Certificate No. 86, in the denomination of $1,476,000, representing bonds heretofore sold to the R.F.C. were prepared. Payment for this interim certificate was made on August 25.

Miscellaneous Activities Division

One hundred and five employment applicants were cleared through the District labor office as eligible for work on the aqueduct. Of this number, 39 were made available for force account work, and 66 were made available for aqueduct contractors.

Field Engineering and Construction

Testing Laboratory — Approximately 41,700 barrels of cement were tested during the month; 14,511 barrels were shipped to the work, of which 6,140 barrels were used on the main aqueduct. A total of 100 tons of coal tar enamel was tested and released for shipment, and 28,000 pounds of whitewash was tested.

Operation of Utilities—During the period July 16 to August 15, kw. hr. of power used amounted to 5,117,106; there were 10,085 long distance telephone calls; and 2,045,000 cubic feet of water was delivered.

Safety Engineering — The lost-time accident frequency rate for the San Jacinto tunnel work for the month of August was 111 as compared with 163 for the first eight months of 1938. See safety flag awards, column 3, this page.

Aqueduct Construction—See progress tables, page 4. All contract items at Parker Dam were completed with the exception of the oil surfacing of the access road to the top of the dam, which was 75 per cent completed. Features which remain to be finished by Bureau of Reclamation force account work are the installation of the crane in the operating house, the trash rack stop logs, and the lamp standards on the roadway.

All contract work on the Gene Wash and Copper Basin dams was completed on August 15.

Excavation of the San Jacinto tunnel was advanced 0.24 mile during August, making a total of 12.38 miles excavated at the end of that period and leaving 3,516 feet to be driven between the Lawrence adit and the Potrero shaft. The strike called August 14, 1937, by Local No. 270, International Union of Mine, Mill and Smelter Workers, was called off August 30, 1938, and all pickets were withdrawn.

Civil Engineering Division

Design — Design drawings and the first draft of specifications were completed for the extension of the Palos Verdes feeder south from 98th Street at Wadsworth Avenue, to its terminus in the Palos Verdes Hills. Plans and draft of specifications for the regulating and shut-off valves for this line were also completed. Work was continued on designs for the Palos Verdes Reservoir, including the dam, spillway, outlet tower, and diversion by-pass channel.

Distribution Division

Office Engineering—Preparation of plan and profile drawings for the Palos Verdes feeder extension south of 98th Street, the computation of bid quantities, and the writing of the text of the specifications were in progress during the entire month.

Field Construction — See progress tables page 4. A firebreak was completed around the Cajalco Reservoir, preparatory to clearing operations, and the removal of trees with a tractor and bulldozer was started August 22.

Electrical Engineering

Main Pumping Plants—See progress tables page 4.

Construction Utilities—A 2300-volt circuit was extended to Parker Dam and temporary power service to Intake plant was provided over the 69-kv. line. The substation at Fan Hill, and the condenser at Parker substation were removed, and work was continued on the power line to serve Copper Basin Dam.

Personnel Division

During the month 458 changes of status, and 27 employment contracts were recorded. The net turnover for all positions for July, 1938, was 4.09 per cent, as compared with 4.42 per cent for the same month in 1937.

Excavation of Oakhill Tunnel Completed Sept. 9

Excavation of the Oakhill tunnel, the second of the three small-diameter tunnels on the upper end of the Palos Verdes feeder of the distributing system, was completed on September 9. Excavation of this 597-foot tunnel, which has an average diameter of 6 feet, was started on August 7.

Shooting was necessary during the major part of the excavation of the small tunnel, which was driven through a sandstone-shale formation. The work is located on distribution schedule No. 21, being constructed for the District by the J. F. Shea Co. "Hank" Ewert is construction foreman on the tunnel. Installation of steel pipe, and concrete backfilling was started on September 17.

Work on the 1622-foot Ascot tunnel, the third of the bores on the upper end of the feeder, is expected to be started in the near future. This tunnel includes a 230-foot adit through which a connection will be made from the M.W.D. distributing line to the Ascot Reservoir, a part of the distribution system of the City of Los Angeles.

BOULDER DAM STORAGE REACHES NEW PEAK IN JULY

Reports from Boulder City indicate that storage in Mead Lake reached a new peak on July 27 of 23,140,000 acre feet of water, as compared with a previous maximum of 15,702,000 acre feet in July of 1937. The reservoir has a total capacity of 30,500,000 acre feet of water. The accumulated storage in the reservoir now gives the Colorado River Aqueduct and other Lower Basin diversions absolute protection against the consequences of a severe drouth such as was experienced during the period of 1933 to 1937.

SAFETY FLAG AWARDS

The San Jacinto tunnel excavation safety flag was awarded to Lawrence for the month of August, and the concreting operations safety flag was won by Potrero.

Purchasing Division

A total of 944 purchase orders was issued, covering purchases amounting to approximately $48,000.

Accounting and Costkeeping

The total cost of the work accomplished to August 31, 1938, was $170,220,830.

Safety

Planning and Enforcement of the Construction Safety Program

By T. W. OSGOOD

Safety Engineer, M.W.D., 1933-1938

Early in 1933, earth began to move on actual construction of the Colorado River Aqueduct project. Ahead lay the building of the main aqueduct and initial unit of the distribution system.

During the following five and one-half years, twenty-nine general contractors and two Metropolitan Water District construction organizations have been engaged in constructing this huge project. By September, 1938, the job practically was completed, for there remained only 0.66 miles of excavation and the placing of 6.68 miles of concrete lining at the San Jacinto 13-mile tunnel.

From the beginning, the work progressed twenty-four hours a day, in eight-hour shifts, with increasing momentum until high speed was realized and maintained with a maximum force of 10,000 men and a total employment of approximately 35,000.

The operations were carried on from sixty-one camps located at strategic points along the 309 miles of the construction activity.

Excavation of the 38 tunnels, aggregating 108 miles in length, has been prosecuted at 66 headings, and the construction of conduits, siphons and other open work, which constitute the connecting links between the tunnels, was carried on at many points of attack.

The safety work, with principal purpose to protect the employees from accidental injuries, has run concurrently with the construction activities along the 309-mile front from the Colorado River to Eagle Rock in the city of Los Angeles.

The Board of Directors and staff of the District have given the same thorough study to safety as they have to any other phase of the aqueduct work and, prior to the beginning of construction, the Board adopted this safety policy—"The application of every possible safety measure shall be practiced."

A Safety Program was adopted and provided for the following features:

1. Executive interest and control were laid as the foundation of the Safety Program, the purpose being to realize full cooperation from all concerned in achieving four vital objectives of the management—first, protection of life and limb of the employees; second, conservation of property; third, maximum progress under existing conditions; and, fourth, reduction in construction costs.

2. Adequate safety and health regulations were included in the construction specifications.

3. A Safety Engineer and staff were employed and general duties were designated, namely, to make safety inspections and reports on all aqueduct work; to study the safety problems of the job and advise the supervisors of the hazards and of corrective measures; to cooperate with the supervisors in the conduct of their safety work; to keep the executives and supervisors informed on the accident trend, on the causes and consequences of accidents, and on methods for preventing accidents.

4. A "Safety Orders" form was drafted for reporting any hazards found to exist on the aqueduct work.

5. Printed instructions were formulated for the organization and functioning of General and Camp Safety Committees and Safety Clubs.

6. Safety bulletin boards were provided for the camps and safety posters and bulletins are furnished weekly.

7. First-aid training for the employees has been conducted annually in cooperation with the United States Bureau of Mines.

8. Mine rescue equipment and truck were provided and rescue squads were trained.

9. Safety rules and regulations bearing upon the following subjects were compiled and distributed among the construction force: Responsibility of supervisors and workmen; tunnel heading operations; haulage; tunnel shaft operations; hoisting engineers; electrical and mechanical equipment; gas and electric welding and cutting; rigging for moving equipment; automobiles and trucks, surface equipment and operations; fire protection; sanitation and hygiene; care of the injured; explosives magazines; safety primers; blasting equipment and procedure; organization and procedure in case of a tunnel fire or other major emergency; and, miscellaneous features.

10. Records of accident frequencies, causes and costs have been kept.

11. Safety literature published by the U. S. Bureau of Mines, the National Safety Council, U. S. Public Health Service, and other recognized authorities has been made available to the construction forces, and various other activities have been carried on to develop the safety spirit within the entire organization.

12. Membership in the National Safety Council has been maintained.

In actual practice the inspection and enforcement procedure has been as follows:

a. Collectively, the construction superintendents, on their own initiative, have been reasonably diligent in the endeavor to maintain safe conditions and safe practices on their respective jobs. It is not unusual that, among the many superintendents, the degree of diligence exercised in preventing accidents varies according to their personal attitudes and temperaments, and it may be added that each superintendent's attitude toward safety, good or bad, reflects the attitude and/or the control exercised by the company or organization for which he works. Also, our records indicate that when the attitude and control are good, the accident rate and costs are low, and vice versa.

b. Safety inspections of aqueduct work are carried on continuously by the Division Engineers and their Resident Engineers and Inspectors, and by the Safety Engineer and Assistant Safety Engineers.

c. Any hazardous conditions and practices observed are entered on the "Safety Orders" form, which is signed by the person who made the inspection, and also by the respective Division Engineers, who, through their signatures, direct that the unsafe conditions noted in the order be corrected at once. Copies of each Safety Order promptly are given or sent to the Superintendent, Division Engineer, General Superintendent, and Safety Engineer.

d. The Division Engineers, directly or through their Resident Engineers and Inspectors, follow up these Safety Orders and enforce compliance therewith in the event that any of the unsafe conditions noted therein are found not to have been corrected.

e. The Safety Engineer and Assistant Safety Engineers also check the unsafe conditions noted in the Safety Orders and notify the Division Engineers of failure to comply with any items therein.

The Safety Program on the construction of the Colorado River Aqueduct, as a whole, has resulted in a consistent yearly decrease in the lost-time accident frequency rate, and the frequency rate for the year 1937 was 38 per cent below that for other tunnel and heavy open construction in California for a five-year period.

NEWS FROM FIELD AND OFFICE

Apparently due to the fact that June weather is hanging on into September, aqueduckers kept Cupid so busy that he hasn't had time to take his annual leave as yet.

From Westwood comes the announcement of the marriage on September 10, of Helen Louise Cavender and Maynard Anderson. Maynard was one of the old timers who worked both on the main aqueduct and distribution engineering forces. He resigned from the District in April, 1937, to go into the contracting business in San Diego, where he and his bride will make their home.

From the basement of the L. A. office, mails and files section, comes word of another middle-aisleing event which occurred on September 12 with the marriage of Patricia Bennett of Los Angeles and Jack "Bunny" Williams. The newlyweds are making their home in Los Angeles. Jack is reported to be blessed with both marital and financial happiness, having been on the collecting side of a number of those "you'll never get married" bets.

Another wedding in the Los Angeles office ranks of the aqueduct clan was that of Mrs. Edith Mann Johnston of Hollywood, and M.W.D. Office Engineer Charles A. Bissell, who were married at the First Presbyterian Church in Santa Barbara on Saturday, September 17. Mr. and Mrs. Bissell are making their home in Beverly Hills.

* * *

The Employees Association have announced that the M.W.D. Tennis Trophy is to be put up to become the permanent possession of the winner of the forthcoming "singles" tournament for both field and office employees. Heretofore, the trophy has been put up to go to the winning field or office team in annual playoffs, and has been won by both field and office teams. Merrill Johnson of the L. A. Purchasing office, has been appointed chairman of the tournament committee, and aqueduckers who want to try for the trophy should immediately contact him. Present plans call for elimination playoffs in both the field and the office, and a final playoff between the winners of these two sections. V. F. Van Wye, Banning Headquarters, will handle entries from Banning and all points east. Distribution field engineering employees will be entered in the L. A. Office playoff.

* * *

Recent transfers of M.W.D. employees include the following: Patrolman C. A. Weeks from the Operating Division to the Transmission Line Division; Assistant Engineer Fred Vosteen from the Banning Headquarters to the Design Division in Los Angeles; General Clerk P. C. Vilander from the Cabazon office of the San Jacinto tunnel to the Salvage Division in Banning.

Assistant Engineer A. E. "Al" Capon from the Los Angeles office of the Electrical-Mechanical Division to the Gene and Intake pumping plants; E. L. Falkenberg from the Los Angeles office of the Electrical-Mechanical Division to the Gene and Intake pumping plants; Inspector N. H. Coulter from the Design Division to the Distribution Field Engineering forces.

Aqueduct Temperatures
September 1 to 15, 1938

	Max.	Min.
Div. 1	109°	72°
Div. 2	105°	71°
Div. 3	106°	71°
Div. 5	101°	52°

* * *

Friends of W. L. Chadwick, who was formerly in charge of the Statistical Section of the Design Division, will be glad to know that he has returned to work from a prolonged illness. Mr. Chadwick resigned from the District in October, 1937, to accept an engineering position with the Southern California Edison Company in Los Angeles.

* * *

Word comes of two former aqueduct "hello girls." Miss Donna Donnilson, formerly in the telephone exchange at the Banning Headquarters, is now employed in the same line of work at the Desert Inn in Palm Springs. Miss Dorothy Lovejoy, formerly in the Los Angeles office telephone exchange, is now working as an operator in the downtown Los Angeles office of the Goodyear Tire and Rubber Company.

* * *

The Pasadena Star-News reports that Arthur L. Klockner has recently been employed by the Pasadena Water Department as chief of the field survey force. Arthur Klockner formerly worked for the District as an inspector on the construction of the San Jacinto tunnel.

* * *

Old-time aqueduckers will be sorry to learn of the recent death of Mrs. C. A. Brownell of Vidal, California. Most of the men who worked on the preliminary surveys boarded at one time or another at the hotel owned by Mr. and Mrs. Brownell in Vidal.

* * *

A note from Fox Case of the Columbia Broadcasting System, who has arranged for a number of the M.W.D. coast-to-coast broadcasts, states that special rates are now available for tours of the new CBS studios at Columbia Square, Hollywood. The tour includes visits to studios originating famous programs, the "master control", and demonstrations of the making of radio "sound effects". In groups of ten or more, the rate for the tour is 30 cents per adult, and 20 cents for children.

* * *

Gene Reynolds, president of the L. A. Employees Association, announces that the management of "Whiting Woods", north of Verdugo City, has invited aqueduct employees to be its guests at any time at that well known pleasure resort. Admission will be without charge to all employees and their families who identify themselves as being associated with the District.

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The official welcome of the City of Los Angeles to the National Convention of the American Legion was extended to the veterans at their opening session by Legionnaire Otto J. Emme, who is one of the Los Angeles representatives on the M.W.D. Board of Directors.

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Added to the "oldtimers" list is the name of Fred J. Doolittle. Fred was first employed on the preliminary surveys at Beaumont as a chainman in February, 1930. Later he worked on the Division 2 engineering force and since March, 1936, he has been with the Distribution Division field engineering crew. At present he is an inspector for the District at the Consolidated Steel Co., Los Angeles plant.

* * *

Another name for the list is that of Ira L. Loverin, who is now a welder at the Lawrence adit of the San Jacinto tunnel. The date that he started work, March 10, 1933, is unforgetably pasted in his memory because it was the day of the famous Long Beach Earthquake. His first job was at Fargo Camp.

Death Takes Senator Del Valle, Early Water Pioneer

Senator Reginaldo F. Del Valle, descentant of an old Spanish family, and a well known figure in the history of Los Angeles, died in that city on September 21. The greater part of his lifetime of public service had been devoted to bringing an adequate water supply to the City of Los Angeles.

He was born in a house facing the old Mission in Los Angeles on December 15, 1854, and one of his principal chores as a boy was to bring water, in wooden pails, from the Los Angeles river to the home of his parents. As he grew up his principal interest was centered on water, and it is said that the present water system of the City of Los Angeles is a monument to his energetic leadership.

In recognition for his many years of campaigning for more water, he was appointed on the Board of Water and Power Commissioners of Los Angeles in 1908, and served on that Board until he retired in 1929.

His record in public office extended back to 1879, when he was first elected to the California State Assembly. He was elected a member of the State Senate, from Los Angeles County in 1882. During his term as a member of the Los Angeles Water and Power Board, President Woodrow Wilson appointed him as a special representative to report on conditions in Mexico.

LITTLE RECOVERY NOTED IN UNDERGROUND TABLES DESPITE ABNORMAL RAINS

(*Continued from Page* 2)

made much progress. The voluminous data have been largely compiled and published by the California State Engineer (Division of Water Resources) and original records have been secured by the Los Angeles Water Department, Los Angeles and Orange County Flood Control Districts, and many water companies and basin protective associations.

A summary of such data, for comparison with the 1931 groundwater conditions, is now of interest as the aqueduct nears completion, and especially in view of the heavy rains and record-breaking floods during March, 1938.

Due to these floods, recovery has been noted in the small sub-basins near the mountains, and in the San Fernando Valley, the latter due to the result of spreading of imported Owens River water during recent years, and of storm runoff this season. Exceptions to this recovery were observed in a few cases during 1938, with a 3-foot drop in part of Sunland basin, and an average drop of 1.7 in the Glendale area.

The coastal plain area to the west, south, and southeast of Los Angeles overlaps three major groundwater basins and for purposes of observation and study, has been divided into 24 minor areas, in each of which groundwater conditions are generally uniform.

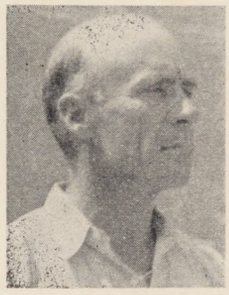
In 12 of these areas, 1937-1938 showed an average drop of 0.9 feet, the other 12 showing an average rise of 1.3 feet. Thus for the entire 400 square miles of coastal plain, the approximate average net rise of the water table was but 0.2 feet, in spite of the fact that rainfall was 56% above normal.

During 1936-37, when the rainfall was 49% above normal, 14 of these areas had an average drop of 1.9 feet in their water table, and 10 had an average rise of 1.6 feet—making a general average drop of 0.4 feet during this period of above normal rainfall.

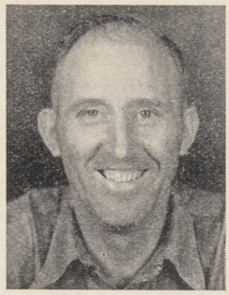
The pumping overdraft is indicated as most severe in the area southwest of Los Angeles to and including Inglewood, El Segundo, and Redondo; in the vicinities of Maywood, Lynwood, Watts, and in a lesser degree at Compton; also, above and below Culver City, and particularly in the Santa Monica pumping area. In all of these sections, the depletion was serious in 1937-1938, and has continued without interruption since long prior to 1931.

(*To be continued*)

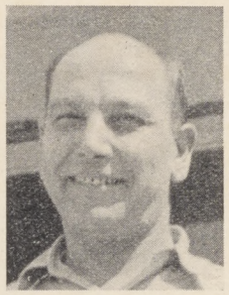
Who's Who On the Aqueduct



E. A. Russell



Frank C. Johnston



Peter DePace

E. A. RUSSELL

General Foreman, Gene Pumping Plant, M.W.D.

Being a good patriot, he was born in Goodland, Kansas, July 4, 1889 . . . Graduated from the United States Naval Academy, Annapolis, Md., in 1912 . . . Served as Ensign, Lieut., jg, and Lieutenant in U. S. Navy during World War . . . Was in Navy Communications department and was selected as Communications Officer at White House to encipher all dispatches between President Wilson and Colonel House during the Peace Conference at Versailles . . . Was with So. Calif. Edison Co., 1921-23, and Stone & Webster Engineering Corp., 1924-1931 . . . First employed by M.W.D. as engineer at Beaumont in 1933; was in Electrical-Mechanical Division, and has been general foreman, pumping plants, since September, 1937 . . . Is married and has a daughter . . . Known as "Ed".

FRANK C. JOHNSTON

Foreman, Banning Shops, M.W.D.

Born in St. Paul, Minn., August 21, 1892. . . Was with Santa Fe R. R. in San Bernardino from 1909 to 1917 as apprentice and graduate machinist. . . 1917-1919 in A.E.F., 19th and 65th Engineers . . . 1919-22, machinist, San Bernardino Shops, Santa Fe R. R. . . 1922-33, Assistant Foreman, Gladding McBean Co., Alberhill and Glendale plants. . . Started with M.W.D. at Pushawalla in 1933. . . Has been foreman Banning Shop since August, 1936. . . . Married and has son and daughter.

PETER DePACE

General Foreman, Intake Pumping Plant M.W.D.

Born in Providence, R. I., February 2, 1887 . . . Attended Drexel Institute, Philadelphia, Pa. . . . Has had 37 years of heavy construction experience, most of it in connection with mechanical work . . . Was General Foreman for Stone & Webster Engineering Corp., from 1917 to 1931 at Hog Island Shipyard; Hartford Electric Light plant, Hartford, Conn.; Atmospheric Nitrogen Co., Hopewell, Va.; and Long Beach Steam Plant, Long Beach, Calif . . . Has been with M.W.D. since January, 1933, when he was first employed as pipeline foreman on construction of utilities . . . Has been general foreman, pump plants since June, 1937 . . . Married and has two sons.